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Flicker are frequently heard from the other side of the outlet, as also the song of the Western Meadowlark from the open fields bordering on the north side.

How different during the second nesting period. It is the middle of June; the water lilies are in bloom, the large flowering spikes of the spirea are waving in the breeze, the odor of the wild rose is in the air, the Merrill Song Sparrows are now nesting near the edge of the outlet, and the willows and thickets at either end of the small meadow on both sides of the outlet seem fairly alive with birds; the Song Sparrows have many neighbors now. Yellow Warblers, Tolmie Warblers, Western Yellowthroats, Western Warbling Vireos, Red-eyed Vireos, American Redstarts, Western Robins, Black-headed Grosbeaks and Catbirds are nesting in and about the haunt.

All through the morning hours, and late in the afternoon, the songs of the various males can be heard. but with all their love and good cheer, the Song Sparrow is able to hold his own, and he makes the surroundings ring with his sweet melody. As the day draws to its close the Robin sings his evening lay, and as the dark shadows creep over the outlet, the little brown bats steal forth from their hiding places and join company with the Pacific Nighthawks in their circling flight over the chosen home of the Merrill Song Sparrow.

*Couer d'Alene, Idaho, February 6, 1919.*

## NESTING OF THE NORTHERN PILEATED WOODPECKER

By H. W. CARRIGER and GURNIE WELLS

WITH ONE PHOTO

THE Northern Pileated Woodpecker (*Phloeotomus pileatus abieticola*), while not rare, is such a wary bird that its nesting habits in California are but little known. In a search through our various publications dealing with such subjects we fail to find a record of the taking of a single set of eggs of this species in the State. It seems probable that there are fewer California taken eggs of this bird in collections than even eggs of the California Condor. Barlow (CONDOR, III, 1901, p. 163) records a nest with young birds at Fyffe on June 13, 1897. Sheldon (CONDOR, IX, 1907, p. 188) records a nest with young near Big Meadows, Plumas County. The date is not given but it is assumed to be early in July.

This paper embraces a partial account of our joint studies of this species over a period of five years (1914 to 1918), and the final culmination of our efforts in the taking of two sets of the eggs. The region worked lies near Cisco, Placer County, California, and it seems probable that the same pair of birds was observed during the five-year period.

While working among the dead and dying trees at the upper end of a large mountain lake in June of 1914 the loud cackle of this unique bird was frequently heard. The type of country appeared to be suitable for the residence of the bird and it was then determined to pay especial attention to this species when next we should visit the lake, it then being too late in the season for eggs. Some

time was spent in watching the birds feed, as they tore and pried off large slabs of dead bark in their search for various grubs and insects.

In 1915 we reached Cisco early in June and at first opportunity searched for our birds. A hard climb took us to the top of the dividing ridge and a swift descent, to the shores of the lake. One of the first birds seen was the Pileated Woodpecker as it flew from a tree standing in deep water to the thick woods across the lake. We passed near this tree and hid in some brush near by to await the appearance of the bird. It shortly returned and made straight for the tree, alighting on the opposite side from that facing us. We watched sev-



Fig. 34. WELLS CLIMBING TO NEST OF NORTHERN PILEATED WOODPECKER, IN ASPEN, IN NEIGHBORHOOD OF CISCO, PLACER COUNTY, CALIFORNIA; ENTRANCE TO NEST CAVITY CAN BE SEEN IN THE TREE TRUNK AT EXTREME TOP OF PICTURE.

eral minutes and as the bird did not appear we approached nearer the tree and were chagrined to discover a large hole about twenty feet up, in plain view and on the side of the tree which had first been exposed to us. We clapped our hands and immediately the bird appeared at the hole and flew cackling away. The tree stood about fifteen feet from the shore of the lake and in about five feet of water. At its base the diameter was about eighteen inches, at the nest entrance about ten. The tree was a live aspen. The base was exceedingly slippery and altogether the examination of the nest presented difficulties.

Floating near the shore was a long dead trunk with a projecting limb which we decided to use as a raft to approach the tree. We each made an attempt to reach the tree but on both trials the raft turned over and we each got an icy bath. Inasmuch as the hills were covered with snow and the temperature on that day was low we were not particularly pleased with the ducking. We decided the tree raft would not serve and accordingly we made a fast trip back to headquarters, covering the distance in less time than that taken in coming out.

We soon returned with some planks and a lot of spikes with which we made a good raft and succeeded in reaching the nest tree. By driving spikes in the trunk Wells reached the nest and drew out a small young fledgling. The appearance of this object, resembling a skinned Chipmunk instead of a large white egg, certainly disappointed us.

The nest cavity was eighteen inches deep and six inches in diameter, while the entrance was three inches in width. The entire excavation had been made in live wood although there were plenty of large dead trees near by.

After leaving the nest we watched the old birds, both of which came to the tree and were quite tame as they fed the young, which, by the way, were three in number. The old birds reminded us a great deal of a pair of Flickers in their general movements and manner.

Determining to obtain a set of eggs the following spring, a visit was made on May 19, 1916, to the same mountain lake. Conditions were found to be quite similar to those of the previous year, there being much snow on the ground. The arrival at the lake was made enjoyable by a view of the pair of Woodpeckers flying towards the woods from the same tree in which the nest was located the previous year. An examination of the old tree was made in double-quick time and resulted in finding a second hole located three feet higher up and on the opposite side of the tree. Although two weeks earlier this year than the last we were again doomed to disappointment, for the nest contained three newly hatched young and one unhatched egg. The young birds evidently remained in the nest for about thirty days as they were seen climbing about the trees on June 20.

The following year (1917) the locality was visited on May 5—we being determined to get ahead of the birds this time. The season was more advanced than on the three previous years and but little snow was on the ground and the lake at this point had less than three feet of water in it. The Pileated Woodpeckers had abandoned the lake and were making their home in a tree located in the channel of a small stream which flowed into the lake and about three hundred yards from their former site. The nest was found to be about half completed. Visits were made to it on several occasions until May 26, but the birds were not seen again. Apparently they had moved out of the basin entirely, as they could not be located.

While spending the winter of 1917-1918 at Summit, Wells determined to make the most of his opportunities to study the Woodpeckers. Through several friends living at Cisco the birds were kept under observation throughout the winter. It was found that the birds seldom strayed as far as two or three miles from their lake and that only the one pair was in evidence.

In 1918, the first attempt to locate the nest was made on May 2, by Wells in company with W. G. Flickinger. On nearing the lake several unfinished cavities were noted, so that the date for eggs seemed about right. There was but

little snow on the ground and practically no water in the lake. A search was then made through the aspen grove which in former years had stood in its entirety in from two to seven or eight feet of water, with the result that Mr. Flickinger discovered a fresh hole forty feet up in a live aspen growing close to the lake shore. Enough chips lay at the base of the tree to indicate that the cavity must be nearly finished. The birds were not in evidence; so the nest was examined. It was found to be completed, but contained no eggs.

Allowing ten days for the birds to lay a complete set, the nest was visited again on May 12, by Wells and Flickinger. We had great confidence that on this trip we would finally get a set of this prince of woodpeckers. When we reached the tree a smart rap on the trunk brought the old bird to the entrance with an anxious expression on her face and we *knew* this time that we would soon have the eggs. She flew a short distance away and was soon joined by her mate. We hid in the brush and waited about thirty minutes, when the female returned and entered the nest. We thus felt positive that the nest contained a full set of eggs, and Wells accordingly strapped on his irons and climbed the tree. His exultant shout proclaimed that the eggs were there—a set of four fresh glossy eggs. The nest cavity was eighteen inches deep by about six in diameter, while the entrance was nearly four inches across.

The nest was visited again on June 1 by both of us, and to our surprise we found that the birds had used the same cavity for a second set of eggs, four in number, which were three-quarters incubated. The short time intervening between the two sets shows that the birds did not lose any time after their first set was lost to them. The locality was again visited on June 30 and we found that the birds had finished another cavity about two hundred feet from the first tree and apparently the female was brooding a third set. We did not disturb the bird and hope that she successfully raised her brood.

Inasmuch as the lake contained no water at this point we made a careful search of the upper end of the basin with the result that twenty cavities in all were located in various trees in what is usually the lake or very close to its shores. Most of these cavities were in live aspens. Apparently this pair of birds has nested here for a great many years, for although we have carefully worked the surrounding country for miles in every direction we have never discovered other birds or their cavities. Inasmuch as the food supply is abundant, and hunters rarely visit the region, it is assumed that the species is simply an extremely rare one for this portion of the Sierra Nevada.

The two sets of eggs are identical in shape, size, and other characters. They are small for the bird, being but little larger than eggs of the Red-shafted Flicker. In their glossy surface, pyriform shape and hardness of shell they are distinctively eggs of the Picidae. The average measurements of the four eggs are about 1.29x0.99 inches.

*Oakland, California, February 24, 1919.*